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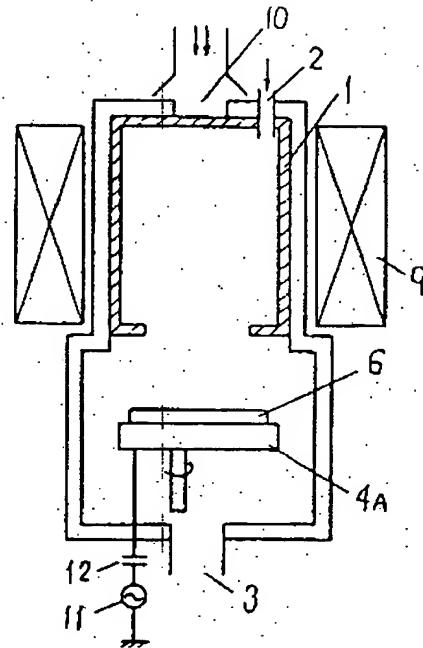
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APPLICANT : MATSUSHITA ELECTRIC IND CO LTD;

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TITLE : PLASMA DOPING SYSTEM



ABSTRACT : PURPOSE: To prevent the temperature rise of an unnecessary sample, and to obtain a plasma doping system enabling the doping with a high concentration impurity by a photo-resist mask by providing an introducing mechanism for a compound gas containing any of boron, phosphorus or arsenic, a plasma generating mechanism by high-frequency discharge and a sample-base rolling mechanism.

CONSTITUTION: The pressure of the inside of a chamber 1 is controlled so as to be brought to approximately 10^{-4} – 10^{-2} Torr by a conductance valve to an exhaust system connected to an exhaust port 3. Microwaves of several dozen–several hundred watts in 2.45GHz frequency are introduced, a magnetic field formed by a coil 9 and electrons in plasma generate a status close to electron cyclotron resonance, and high-density plasma is generated in spite of a high vacuum. Since a sample base 4A is separated from a plasma generating chamber by several dozen cm, the temperature of a wafer is hardly elevated due to energy except plasma contributing to doping, and deterioration due to the temperature of a photo-resist on the semiconductor wafer 6 is eliminated approximately.

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